Claims

1. A magnetic sensor comprising a magnetic circuit and an electronic circuit, the magnetic circuit comprising a yoke and a giant magneto-resistor and the electronic circuit comprising a coil arranged to generate a magnetic field in the yoke and a feedback control loop responsive to the output of the giant magneto-resistor to energise the coil so that the giant magneto-resistor operates in a predetermined region of its characteristic.

2. A magnetic sensor according to claim 1, wherein the frequency response of the control system has a low-pass characteristic.

3. A magnetic sensor according to claim 2, wherein said low-pass characteristic has a first order roll-off with a -3dB point in the range 1 to 5Hz.

4. A magnetic sensor according to claim 3, wherein the -3dB point is at 2Hz.

5. A magnetic sensor comprising two giant magneto-resistors connected by a yoke, and a subtracter configured for subtracting the output of one of the giant magneto-resistors from that of the other, wherein the giant magneto-resistors are arranged such that only one of the giant magneto-resistors is significantly sensitive to magnetic fields generated in a sensing region and both giant magneto-resistors are sensitive to ambient magnetic fields.

6. A magnetic sensor according to claim 5, comprising first bias means for applying a constant bias voltage to one of the giant magneto-resistors and second bias means for applying a variable bias voltage to the other giant magneto-resistor, wherein the second bias means is responsive to the output of the subtracter to generate a bias voltage tending to cause the output of the subtracter to be zero.

7. A magnetic sensor according to claim 5 or 6, wherein the yoke comprises two

connected arms, one giant magneto-resistor is mounted between free ends of the arms of the yoke, and the other giant magneto-resistor is mounted between the arms of the yoke between their interconnection and said one giant magneto-resistor.

8. A magnetic sensor according to any one of claims 1 to 4 and any one of claims 5 to 7.

9. A banknote validator including a magnetic sensor according to any preceding claim, the magnetic sensor being arranged to sense a magnetic field produced by a banknote being validated.

10. A banknote validator including an optical sensor for sensing optical characteristics of a banknote being validated, the sensor comprising a light source, incident light-directing means for directing light from the light source onto a banknote being validated, a photodetector and reflected light-directing means for directing light from the light source, after reflection from a banknote being validated, to the photodetector, characterized in that the light source is a source of broadband light and an optical filter is interposed between reflected light-directing means and the photodetector.

11. A banknote validator according to claim 10, wherein a light guide serves as both the incident light-directing means and the reflected light-directing means.

12. A banknote validator according to claim 11, wherein the light guide is substantially in the form of a trapezoid, the narrow end of which is adjacent the light source and the photodetector and the broad end of which is adjacent a banknote path.

13. A banknote validator according to claim 10, 11 or 12, wherein the light source produces light substantially across the whole of the visible spectrum.

14. A banknote validator according to any one of claims 11 to 13, wherein the

optical sensor comprises a plurality of photodetectors and a plurality of optical filters to which light is directed by the reflected light-directing means, the optical filters having different passbands and being associated with respective photodetectors.

15. A banknote validator according to claim 14, wherein the 3dB stopbands of the filters are 420-720nm and 480-540nm together with $>$820nm respectively.

16. A banknote validator including an optical banknote sensor configured to sense light reflected by a banknote being validated, characterized in that the sensor is configured to sense light reflected obliquely from a banknote being validated.

17. A banknote validator according to claim 16, the sensor is configured to sense light reflected from a banknote being validated at an angle in the range 60° to 80° to the surface of the banknote at the point of reflection.

18. A banknote validator according to claim 17, wherein the angle is 70°.

19. A banknote validator according to claim 16, 17 or 18, wherein the optical banknote sensor comprises a light guide for guiding light from a banknote being validated to a photodetector.

20. A banknote validator according to claim 19, wherein the light guide comprises a transparent, trapezial, planar solid having a narrow end and a broad end, the narrow end being adjacent the photodetector and the broad end being adjacent a banknote path.

21. A banknote validator comprising a banknote path, a non-return gate in the banknote path, reversible banknote driving means for driving a banknote in the banknote path, banknote characteristic sensing means and processing means operable to operate the banknote driving means in a first direction during sensing of banknote characteristics by the banknote characteristic sensing means and thereafter reverse the

banknote driving means to reject or accept a banknote, wherein the processing means is responsive to the output of the banknote characteristic sensing means to identify an acceptable banknote and, if a banknote is identified as being acceptable, to reverse the banknote driving means only after the banknote has cleared the non-return gate.

22. A banknote validator according to claim 21, wherein the non-return gate includes banknote-guiding means arranged for guiding an acceptable banknote along a banknote accept path when the banknote driving means is reversed.

23. A banknote validator according to claim 22, wherein the non-return gate comprises pivotally mounted flap means biased into the banknote path and extending in the direction of travel of a banknote before reversal of the banknote driving means.

24. A banknote validator according to claim 23, wherein the flap means is pivoted into a open position by contact with a banknote passing in a banknote insertion direction along the banknote path.

25. A banknote validator according to claim 22, 23 or 24, including a rotatable banknote guide located behind the non-return gate and a banknote guide wall, wherein the banknote driving means includes a banknote driving wheel below the rotatable banknote guide, and an acceptable banknote is guided by the non-return gate and the banknote guide wall up and rearwardly over the rotatable banknote guide when the banknote driving means is reversed.

26. A banknote validator according to any one of claims 21 to 25, wherein the non-return gate extends substantially completely across the width of the banknote path.

27. A banknote validator according to claim 22 or 23, wherein the underside of the flap means has a projection and the banknote path has a depression, the projection being received in the depression when the flap means is in its banknote path blocking

position.